What is Claimed is:

1. A method of forming a precision shaft for a permanent magnet motor, the method comprising the steps of:

first defining a working region of the precision shaft having an associated working surface region;

second defining a rotor region of the precision shaft having an associated rotor surface region, the rotor region of the precision shaft having a first predetermined cross-sectional diameter;

first preparing the working surface region of the precision shaft using a cutting tool, said step of first preparing including the further step of performing a first cutting pass by the cutting tool;

second preparing the rotor surface region of the precision shaft using the cutting tool, said step of second preparing including the step of continuing the first cutting pass by the cutting tool into the rotor surface region of the precision shaft; and

third preparing the working region of the precision shaft using the cutting tool, said step of third preparing including at least a second cutting pass by the cutting tool into the working surface region of the precision shaft.

2. The method of claim 1, wherein said steps of first preparing the working surface region of the precision shaft and second preparing the rotor surface region of the precision shaft include the step of forming a continuous helical cut along the working and rotor surface regions of the precision shaft, whereby an inter-helix region of the rotor surface region of the precision shaft retains the first predetermined cross-sectional

diameter.

3. The method of claim 2, wherein said step of forming a continuous helical cut along the working and rotor surface regions of the precision shaft is performed at a depth of approximately between 0.001" and 0.004" into the rotor surface region.

4. The method of claim 3, wherein said step of forming a continuous helical cut along the working and rotor surface regions of the precision shaft is performed at a depth of approximately 0.003" into the rotor surface region.

5. The method of claim 3, wherein said step of forming a continuous helical cut along the working and rotor surface regions of the precision shaft is performed using a cutting tool having a radius of approximately 0.020".

6. The method of claim 2, wherein there is further provided the step of installing a permanent magnet onto the rotor surface region of the precision shaft.

7. The method of claim 6, wherein said step of installing a permanent magnet onto the rotor surface region of the precision shaft is performed using epoxy as an adhesive.

8. The method of claim 7, wherein the epoxy is an A+B heat cured type of epoxy.

9. The method of claim 7, wherein the epoxy is of the type that conforms to specification MMM-A-132.

10. A rotor for a permanent magnet motor, the rotor comprising:

a rotor shaft having:

a working region for delivering mechanical energy; and

a rotor region arranged coaxially with said working region, said rotor region

having a rotor region surface having a rotor region surface cut therein; and

a permanent magnet arrangement coupled by an adhesive to said rotor region of said rotor shaft for facilitating conversion of electromagnetic energy to mechanical energy, adhesion between said permanent magnet arrangement and the rotor region surface being enhanced by the rotor region surface cut.

11. The rotor of claim 10, wherein the rotor region surface cut is a continuation of a working surface region cut.

12. The rotor of claim 11, wherein the working region of said rotor shaft has a threaded potion, and the working region surface cut is a first cut pass of the threaded portion of the working region of said rotor shaft.

13. A rotor shaft for a permanent magnet motor formed by the process of:

first preparing a working surface region of a precision shaft using a cutting tool, said step of first preparing including the further step of performing a first cutting pass by the cutting tool;

second preparing a rotor surface region of the precision shaft using the cutting tool, said rotor surface region having a first predetermined cross-sectional diameter, said step of second preparing including the step of continuing a first cutting pass by the cutting tool into the rotor surface region of the precision shaft, said step of continuing a first cutting pass by the cutting tool forming a continuous helical cut along the working and rotor surface regions of the precision shaft, whereby an inter-helical cut region of the rotor surface region of the precision shaft retains the first predetermined cross-sectional diameter;

preparing the working region of the precision shaft using the cutting tool, said step

of third preparing including at least a second cutting pass by the cutting tool into the working surface region of the precision shaft; and

installing a permanent magnet onto the rotor surface region of the precision shaft by use of an adhesive, whereby the installed permanent magnet on the rotor surface region of the precision shaft forms the rotor shaft of the permanent magnet motor.